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On the Leading Edge of the Massachusetts Economy

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Massachusetts Technology Development Corporation

GOVERNMENT DOCUMENTS COLLECTION
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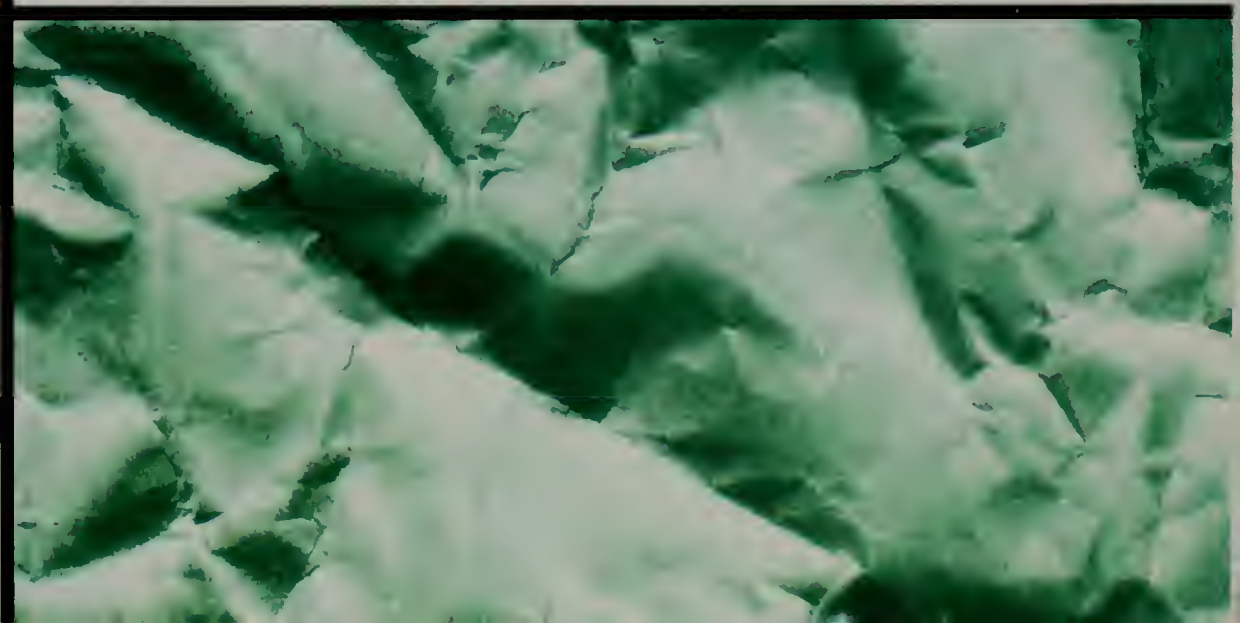
University of Massachusetts



MTDC Overview

Massachusetts has a long tradition of leadership in the application of technology to solve basic problems and advance the commercial success of new enterprises. In part, this history has been a result of the Commonwealth's need to provide premium-priced products for export to other parts of the nation and world to offset the high cost of importing the basic resources of food and energy. The tradition has long been institutionalized through the large number of public and private universities, the strong system of public schools and the financial institutions that have supported these activities.

The fundamental prerequisites of a strong technology-based economy are technological talent, entrepreneurial leadership and financial resources that encourage research and development and patiently nurture new industries. The Commonwealth has taken a leadership role over the years in providing support for these basic needs. This leadership role began in the 17th century when the Commonwealth provided financial support to help build Harvard University. It continued in the 19th century when MIT was founded with significant financial assistance from the State. In the 20th century, the Commonwealth has expanded its commitment to the future through innovative programs like MTDC.

MTDC History

In 1978 the Commonwealth enacted a law creating the Massachusetts Technology Development Corporation. MTDC was established to address the "capital gap" for start-up and expansion of early-stage technology companies.

From 1980 through 1985, MTDC made investments totaling over $7.3 million among 33 companies. Through June 30, 1993, MTDC's total cumulative investments grew to over $22.4 million (including PRIT) in 66 companies. The Corporation is self-supporting based upon returns from previous investments.

In 1986 MTDC began investing $2 million of the Massachusetts Pension Reserves Investment Trust (PRIT) under a management agreement with the Pension Reserves Investment Management Board (PRIM). These funds are invested in later-stage rounds of financing where there are opportunities for substantial capital gains to benefit PRIT.

MTDC Objectives

Through each phase of its existence, MTDC has pursued the following four basic objectives:

- to help create primary employment in technology-based industries in Massachusetts;
- to attract and leverage private investment in Massachusetts companies;
- to foster the application of technological innovations where Massachusetts companies are, or can be, leaders;
- to nurture entrepreneurship among Massachusetts citizens, planting the seeds for long-term economic development in the State.

MTDC Programs

While MTDC's Investment Program has been its most visible activity, the Management Assistance Program has been quietly helping entrepreneurs to launch or expand their businesses. Through this Program, MTDC's staff reviews initial business plans, provides counsel as to the most feasible ways of raising necessary capital from private and/or public sources and assists companies in locating these alternative sources of funding.

Representative MTDC Investments

Computer Software and Services

*Aspen Technology, Inc.	Cambridge
AudioFile, Inc.	Lexington
COLLEGE COUNSEL, INC.	Natick
Component Software Corporation	Lexington
GammaGraphX, Inc.	Waltham
IMC Systems Group, Inc.	Waltham
**Interleaf, Inc.	Waltham
**Powersoft Corporation	Burlington
Symbiotics, Inc.	Cambridge
Technology Integration, Inc.	Bedford

Computer Equipment and Peripherals

**Display Components, Inc.	Westford
**MicroTouch Systems, Inc.	Wilmington
Reflection Technology, Inc.	Waltham
**Xylogics, Inc.	Burlington

Industrial Automation Systems and Equipment

**Aseco Corporation	Marlboro
Icon Corporation	Woburn
IVS Incorporated	Concord
**Kronos Incorporated	Waltham
Proconics International, Inc.	Wilmington
Tytronics, Inc.	Waltham
XRL, Inc.	Canton

Biomedical Investments

*AMDEV, Inc.	Danvers
**Endogen, Inc.	Boston
EXOS, Inc.	Woburn
Littlepoint Corporation	Cambridge
Optical Micro Systems, Inc.	North Andover
**PLC Systems, Inc.	Milford
StatSpin Technologies	Norwood

Telecommunications and Data Communications

ABOVO, Inc.	Chicopee
AT/Comm, Inc.	Marblehead
*Chromatic Technologies, Inc.	Franklin
*Fotec, Inc.	Boston
MultiLink, Inc.	Andover
Voicetek Corporation	Chelmsford
**Zoom Telephonics	Boston

Material Science and Related Systems

*Crystal Systems, Inc.	Salem
Fiber Spar & Tube Co.	West Wareham
**Spire Corporation	Bedford

Advanced Defense Systems and Products

Millitech Corporation	So. Deerfield
**Pacer Systems, Inc.	Billerica

Environmental Management

Falcon Detection Technologies, Inc.	Plymouth
Sensitech Inc.	Beverly

*Exit Strategy Completed – Acquisition/Buyback

**Exit Strategy Completed – Publicly Traded

June 1993

How to Apply

What the Applicant Does:

The applicant submits a comprehensive business plan. A well-thought-through plan reduces the need for questions and speeds the investment process, which oftentimes can be completed in eight to twelve weeks. The plan should address the following areas:

- characteristics and proprietary position of the company's products or services;
- present and future markets for those products or services;
- strategy for achieving and maintaining significant market share;
- company's financial history (if applicable) and projections, including balance sheets, profit and loss statements and cash flows;
- backgrounds, experience and financial commitments of principals and key managers;
- statement of the amount, timing and projected use of the capital required;
- statement of the projected growth in employment, or other positive economic impacts, which an MTDC investment would facilitate.

Proposals for financing should be addressed to:

John F. Hodgman, President
MTDC
148 State Street
Boston, MA 02109
TEL 617 723-4920
FAX 617 723-5983

What MTDC Does:

MTDC's professional staff negotiates with each company an investment whose terms are specifically tailored to meet the needs of the company, the interests of the co-investor and the goals of MTDC. Applications are invited not only from entrepreneurs who are principals in their own firms but also from members of the venture capital, banking, legal, auditing and academic professions who are familiar with business opportunities.

MTDC seeks to make all of its investments on a co-venture basis with compatible professional investors from the private sector. These may include venture capital firms, banks, SBICs, insurance companies, limited partnerships, informal investor networks, and individual and corporate investors with substantial net worths.

The size of MTDC's initial funding to an applicant is determined by the capital needs of the firm and the investment of the co-investor. Though investments can range up to a maximum of $500,000, most are typically in the $100,000 to $250,000 range.

Investments are made as debt, equity or a combination of both. The debt portion of the financing is usually a long-term, unsecured, subordinated note with a partial moratorium on principal repayment. As a condition of providing such favorable debt financing, MTDC seeks an equity participation which is fair and reasonable when compared to the investment being made by the co-investor. Typical equity participation is through the purchase of the company's stock.

MTDC's Procedures:

MTDC's Investment Analysts are assigned cases to review and monitor as appropriate under each of its programs. The cases are discussed at regular staff meetings, and those that qualify for investment are closely reviewed by MTDC's management for recommendation to the Board of Directors. Before an investment is approved by the Board, the management of the company will meet with Board Members, and a detailed investment report prepared by MTDC staff will be reviewed and analyzed.

No formal application is necessary, but the presentation of a written business plan is required before an in-depth review of the proposal can be undertaken. MTDC makes investments only in companies with the following characteristics:

- The company must be located in, or agree to locate in, Massachusetts.
- The company's business must be technology-based, and its principal products or services must be sufficiently innovative to provide a competitive advantage.
- The business expansion which MTDC's investment would help to finance must produce a significant growth in employment.
- The company must be able to demonstrate that it has been unable to secure from conventional sources sufficient capital on affordable terms to finance its expansion.
- The company must be able to show the prospect of a high rate of return on investment.

MTDC and the Power of Leverage

Massachusetts Technology Development Corporation (MTDC) has invested in many of the Commonwealth's most promising new technology-based companies. These companies provide incalculable economic benefits that spread through the entire Massachusetts economy. MTDC believes strongly in the concept of financial and economic leverage – using minimal resources to maximum advantage. In its fourteen years of existence, MTDC has invested a total of almost $20 million in 63 Massachusetts companies that have since created over 3,500 new jobs and many millions of dollars worth of tax revenues, local purchases of goods and services, and additional private investment.

MTDC has a unique approach to using leverage to gain wide-ranging economic benefits. It is a simple yet sophisticated approach that requires taking risks in the expectation of reaping significant rewards – rewards that are felt throughout the Massachusetts economy.

4,800 Jobs

$200 Million + Annual Payroll

$100 Million + Purchases of Goods and Services

$11 Million + of State Tax Revenue

$57 Million + of Federal Tax Revenue

$270 Million of Additional Private Investment Funds Stimulated

MTDC RESOURCES

- **$20 Million Invested in 63 Massachusetts Companies**

Exos Leverages Massachusetts' People. . . And Finds Big Returns

When Beth Marcus co-founded Exos Inc. of Woburn in 1989, she was focused mainly on developing the new technology she had planned for diagnosing and reducing the rapidly increasing number of hand

How Massachusetts' Special Resources Help Grow the Companies of Tomorrow

Throughout its history, Massachusetts has been at the forefront of economic change because of the intellectual resources of its people.

But the vagaries of economic change work positively and negatively for regions without natural resources. In the early nineteenth century, Massachusetts traders pioneered the huge clipper ships that dominated the oceans for several decades – until they were displaced by steam-powered ships.

Then, in the late nineteenth century, Massachusetts entrepreneurs took on national economic leadership by pioneering the industrial revolution. The state became a world leader in producing textiles, shoes, silverware, machine tools, glass, paper, rubber products and locomotives. It was an age in which towns like Lowell and Holyoke became major business centers.

By the twentieth century, however, cheap labor elsewhere in the country led many manufacturing companies out of Massachusetts. Once again, the Massachusetts economy had to transform itself, and this time it innovated with rapidly growing electronics, computer, financial services, and health care organizations. By the beginning of the 1990s, some of those companies had run into trouble because of rapidly changing technology and cutbacks in defense spending.

Now, in the information age, Massachusetts is again looking forward to economic renewal. Each time, though, it becomes more difficult, partly because the pace of economic change keeps speeding up

injuries cropping up in the workplace. "I was thinking primarily about technology and markets," she recalls.

As a technologist, she now realizes that she was probably too narrowly focused because "I wasn't thinking much about people."

The key ingredient in Exos' growth over the next three years to more than $1 million in annual sales has been the expertise of its more than 20 employees. "The biggest surprise to me in growing this company was how much time I spent looking for the right people," says Marcus.

Fortunately, she found them, primarily in two of the state's major universities – Massachusetts Institute of Technology and Boston University. Marcus, who is herself a product of MIT, has taken to hiring students for the summer or part-time during the school year. "If we like them, we keep enticing them back."

She is amazed at their contributions. Two even designed new versions of the company's main product – before being hired as full-time employees. About one-third of the company's full-time employees are from these universities.

"We have leveraged heavily on university people," says Marcus. "That's why Exos is here. I want to be here in Massachusetts where we have access to the top people. We have some of the best brains on the continent helping us solve problems. It gives us a competitive advantage."

Like many early-stage technology companies, Exos in its brief history has also had to deal with difficult financial challenges. In 1990, MTDC made a $250,000 investment and introduced Exos to other investors who provided an additional $250,000. Obtaining that $500,000 of financing enabled Exos to raise another $550,000 a year later from another venture capital firm. By 1993, the company was moving toward profitability and accelerated growth.

ANATOMY OF AN MTDC INVESTMENT

Exos, Inc.

FOUNDED: 1989

LOCATION: Woburn

PRODUCT: Diagnostic tools for analyzing hand movements

MTDC INVESTMENT: $250,000 in 1990

EMPLOYMENT AT TIME OF MTDC INVESTMENT: 2

1993 EMPLOYMENT: 23

and partly because there is much more competition – in this country and abroad. Many areas of the world are trying to gain a competitive edge. Few of them have the special resources of Massachusetts – the universities, the research organizations, the medical facilities and the technology base. But those resources only work for economic development if they are fully exploited – and that requires ongoing investment.

MTDC: A Venture Capital Firm with a Unique Investment Philosophy

At first glance, MTDC operates like most venture capital firms. Each year, its staff chooses from among hundreds of start-up and early-stage businesses those few it believes can grow into companies with many millions of dollars of sales. MTDC carefully assesses such factors as marketplace and technology trends together with financial projections and management teams.

But in one important way, MTDC operates much differently than other venture capital firms. Because it is a state-sponsored venture capital firm, it seeks companies that "export" goods and services outside Massachusetts and "import" dollars that create jobs in our diverse businesses and institutions.

MTDC knows that through the 1970s, 1980s, and into the 1990s, the largest single creator of new jobs has been companies with fewer than ten employees. It knows that large companies are encountering increasing difficulty growing and, in many cases, are retrenching and losing jobs. Indeed, MTDC sees economic growth coming increasingly from small companies creating tens or hundreds of jobs each rather than a few big companies creating thousands of jobs.

In evaluating companies, MTDC, therefore, applies a unique investment philosophy that includes the following criteria:

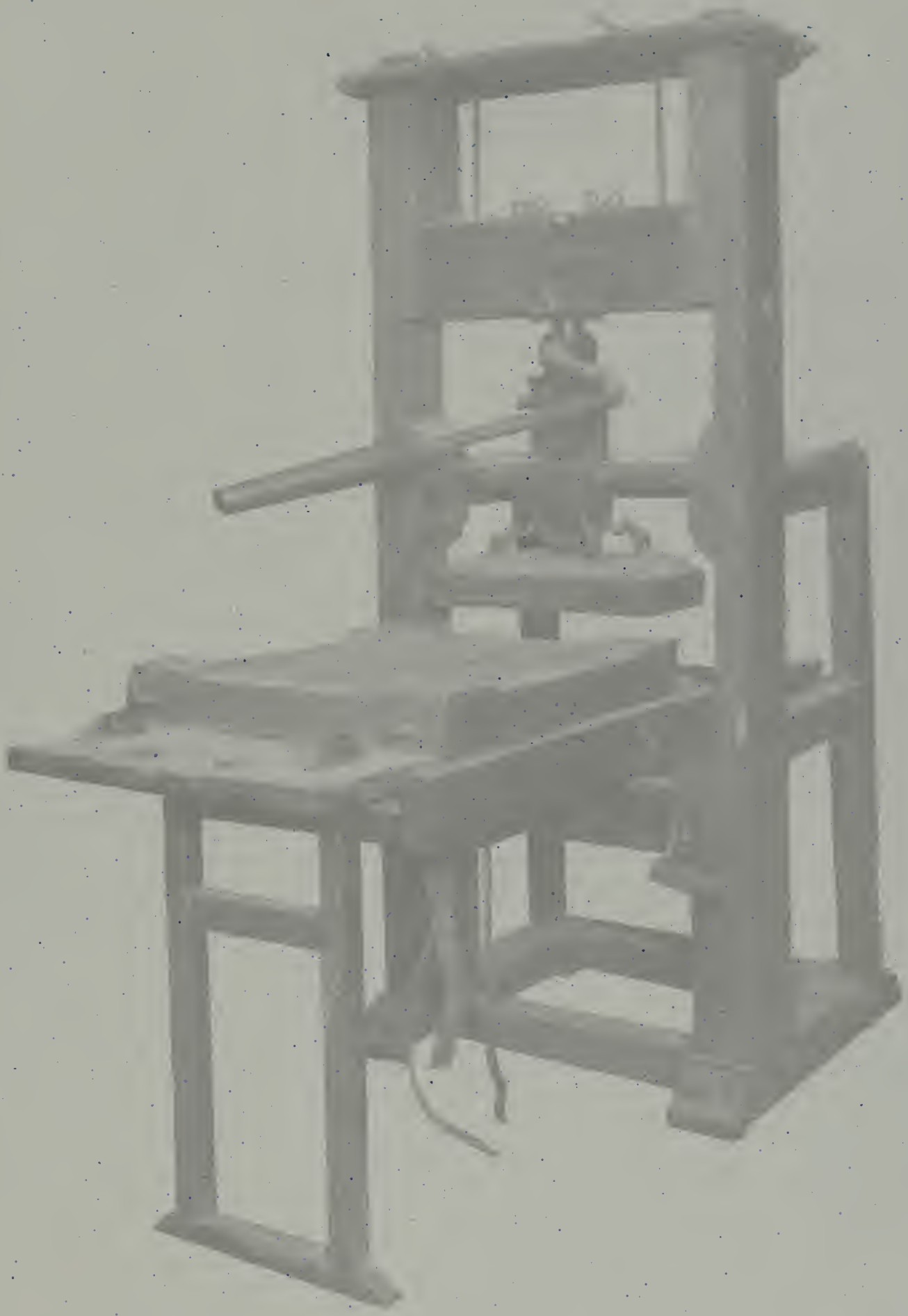
- It generally limits its initial investment to between $100,000 and $250,000 in a single company.
- For every dollar MTDC invests, it seeks three to five dollars of co-investment.
- MTDC seeks out technology companies that show the prospect of a high rate of return on investment by pursuing highly focused niche markets rather than mass markets.

MTDC's "Bootstrapping" Approach to Getting Started

Budding technology entrepreneurs frequently "bootstrap" their operations – using their personal savings, borrowing from friends, or taking credit card advances – until they are well enough established to be considered for a bank loan or investment funds: MTDC has had a similar history.

After MTDC was established by the Massachusetts legislature in 1978, the new entity applied to the federal government for its initial investment capital and received a $2 million grant from the Economic Development Administration (EDA). Shortly thereafter, MTDC received a commitment for another $1 million from EDA, which leveraged a matching grant of $1 million from the state government. These initial funds enabled MTDC to begin the venture capital process.

Once MTDC started to identify an increasing number of companies in need of finance, the state government provided additional grants to the investment fund each year between 1981 and 1988. These grants totaled $4.2 million.



- MTDC concentrates on companies that have the capacity to create a significant number of jobs.
- MTDC invests in early-stage companies that are having difficulty raising capital from conventional sources.

Those companies MTDC invests in require ongoing attention in the form of management assistance and additional financing. They tend to grow unevenly, and sometimes flirt with failure before achieving their true potential. The entrepreneurial process is studded with obstacles, but pays dividends for the persistent and patient.

Patience Pays Off for Powersoft

Sometimes Mitchell Kertzman thinks he's spent his whole life being an entrepreneur. He began a company (known then as Computer Solutions, Inc. and now named Powersoft Corp.) to do custom computer programming and time sharing in 1974 at age 25, shortly after dropping out of Brandeis University.

By 1980, when Kertzman took on a partner to help develop software to automate manu-

Managing the Long-Term Cycle for Success

Successful investing of any kind requires long-term patience. For MTDC, though, long-term patience involves much more than simply making investments and waiting for companies to succeed.

An important factor in MTDC's successful track record has been its ability to stimulate public-private partnerships. Serving as the public's representative, MTDC usually requires that any company it invests in also obtain private investment funds.

This requirement reduces the risk for MTDC and, more importantly, it magnifies MTDC's leverage capabilities. Thus, MTDC may invest only $250,000 in a promising Massachusetts technology company. But in such situations, MTDC often serves as the driving force in the total investment process. Its initial commitment convinces other venture capital firms to commit. Thus, a Massachusetts company obtains the investment funds it requires and MTDC is positioned to capitalize on the company's success.

Another important ingredient in MTDC's success has been its "evergreen" approach. A gain on an investment becomes new funding for, hopefully, another winner.

The process never really ends. But over time, the returns accumulate and multiply. In addition to yielding solid financial returns, MTDC's winning companies include those that, over several years, provide steady employment growth, innovative "export" products, and purchases of goods and services from other Massachusetts businesses.

facturing, the company still hadn't achieved its first million dollars of sales. When Kertzman decided to launch a national sales effort in 1982 and began seeking $750,000 of venture capital, he was quickly turned down by nearly a dozen venture capital firms.

Finally, in 1983, Kertzman found his first potentially serious investor: MTDC. But there was a string attached. MTDC would advance only $150,000 of the money the company sought, and then only if other venture capital firms invested the remaining needed funds. Using MTDC's connections in the investment community, Powersoft raised an additional $750,000 from three other venture capital firms, giving it a total of $900,000.

"Without MTDC, things were looking bleak," recalls Kertzman.

Additional funds – a total of more than $6 million – would be needed during the 1980s to fuel the company's growth. Only $300,000 of that came from MTDC, but much of the remainder came from venture capitalists MTDC introduced Powersoft to. As the company struggled to become profitable enough to justify such a large investment, it took on the look of a company professional investors sometimes label "the living dead" – strong enough to continue in business but not strong enough to realize investment gains.

Finally, in 1990, Powersoft introduced a new software product to aid in computer networking, and sales took off. By 1993, nearly twenty years after its founding, Powersoft had finally achieved its potential. Sales of the Burlington, Massachusetts company were approaching $40 million. It had 145 employees, who shared in an annual payroll exceeding $6 million.

For MTDC and other investors who stuck with Powersoft during the tough times, the financial payoff began in February 1993 when the company went public. The ripple effect on the Massachusetts economy continues to extend far beyond that result.

The Ties that Bind a Software Company to Massachusetts

One recurring nightmare for state economic development officials is that successful companies will be lured away from their home state by aggressive economic development officials from another state.

Massachusetts economic development officials need not have that fear about Powersoft Corp. of Burlington. While the company would seem to make an inviting target for neighboring states because of its impressive sales and employment growth, Mitchell Kertzman says the company plans to continue to grow in Massachusetts.

"We can't move more than a few miles in any direction without losing our primary assets, our people. They are our only competitive advantage."

Couldn't Powersoft find good people in another state? Not very easily, says Kertzman. "There is a supply of experienced, well trained people here. They come to us from other software companies in the area." Few other areas of the country have such a concentration of people with expertise in computer software.

ANATOMY OF AN MTDC INVESTMENT

Powersoft Corp.

FOUNDED: 1974 (as Computer Solutions, Inc.)

LOCATION: Burlington

PRODUCT: Computer networking software

MTDC INVESTMENT: $150,000 in 1983
$150,000 in 1984

EMPLOYMENT AT TIME OF MTDC INVESTMENT: 20

1993 EMPLOYMENT: 145

One Fast-Growing Company's Brush with Disaster

Seven years after he and four partners founded Zoom Telephonics in Boston back in 1977, Frank Manning had achieved what most entrepreneurs only dream about. Sales of the company's automated dialing devices for long-distance access code dialing had "zoomed" to $6 million annually by 1984 from only $200,000 in 1981.

The Opportunities – and Dangers – of Fast Growth

Entrepreneurs and investors alike dream of being involved in companies that grow quickly. Fast-growing companies trigger a special energy and excitement for founders and employees alike. Fast growth also means rising sales, profits and employment.

But fast growth has its dark side as well. It spawns competition. It creates challenging management problems that, if not handled properly, can lead companies to run out of cash, which in turn can lead to layoffs, unpaid suppliers, and eventually even to bankruptcy.

Managing growth is an imprecise science at best. One of MTDC's major challenges is to make judgments about companies experiencing the vagaries of growth. It must decide whether to invest in companies running short of cash because of their fast growth. It must determine where additional resources might be obtained. Its officials must dispense advice to the management team facing crises created by fast growth.

These decisions and determinations must often be made quickly, before the companies enter a crisis situation. MTDC must determine whether or not fast-growing companies are capable of using investment funds to chart a path of controlled growth.

The decisions are extremely important. On the one hand, the rewards of success to the Massachusetts economy can be little short of breathtaking. Fast-growing companies create large numbers of new jobs and new tax revenues.

On the other hand, companies that are unable to manage their growth are doomed to create significant pain when they crash because of the laid off employees, unpaid suppliers, and unserved customers the companies leave in their wake.

To keep up with demand, hiring had also soared, from three employees to 54. "Those were the glory days," recalls Manning.

But just as quickly as the company rocketed to success, it crashed. Equal access by all long-distance services to telephone lines eliminated the long access codes – and the need for the automated dialers. Annual sales quickly plummeted to $1.5 million and the employment level was slashed from 54 to 16.

While business was crashing, Zoom developed and began selling a new product, a computer modem to send data over telephone lines. Despite that hopeful sign, banks and private investors wanted nothing to do with a company as down on its luck as Zoom, recalls Manning. Without quick financial help, though, the company's new modem might never be fully exploited in the marketplace.

Manning recalls those dark days more vividly than he would care to. "There were many nights when I would wake up with a terrible pain piercing my chest, from tension."

MTDC considered helping Zoom during those dark days of the mid-1980s. It loaned Zoom $200,000 via a note convertible into stock, and agreed to delay interest payments for two years. MTDC officials also helped negotiate with anxious bankers who were eager to apply the $200,000 to partially repay Zoom's debt. "I was impressed at how responsive MTDC was to our needs," recalls Manning. "We needed some help, and they came through."

The MTDC loan enabled Zoom to raise another $750,000 from other investment sources. It also enabled Zoom to get back on its feet and resume its growth.

With MTDC's investment came important management advice, says Manning. MTDC officials helped him realize that the company's earlier growth "was too fast and out of control." Among the problems: an inexperienced management team, excessive hiring, excessive inventory buildup and excessive debt.

Although the company has resumed its earlier growth, Manning is confident that Zoom won't repeat its earlier problems. "The growth now is controlled. I believe we could have grown faster, but we have been smart to manage the growth and try to build a solid structure that can last."

By the early 1990s, Zoom's sales were in excess of $40 million annually, and employment had increased to 100, with about half involved in manufacturing the company's line of computer modems in Boston.

ANATOMY OF AN MTDC INVESTMENT

Zoom Telephonics Inc.

FOUNDED: 1977

LOCATION: Boston

PRODUCT: Computer modems

MTDC INVESTMENT: $200,000 in 1985
$ 75,000 in 1987

EMPLOYMENT AT TIME OF MTDC INVESTMENT: 28

1993 EMPLOYMENT: 100

MicroTouch Kept Adjusting Its Technology – Until It Was in Synch with the Marketplace

It's easy to talk about the importance of persistence and flexibility in successfully starting a small company, but the true test of one's determination comes when one's business and livelihood are at stake. Jim Logan discovered that reality in the early 1980s, when he was trying to build MicroTouch Systems, Inc. to pioneer in producing

The Pressures of Accelerating Change: Identifying Companies that Can Keep Up

No business, regardless of its size, is immune to the huge forces of change shaking our world today.

The business landscape is littered with the remnants of major corporations that failed to stay ahead of fast-moving marketplace changes. Many of these companies were household names before they went astray.

The business landscape is also littered with the business plans and stock certificates of much smaller companies trying to sell exciting products that weren't effectively marketed or were too far ahead of their times.

The challenge can only be expected to become more difficult as the pace of change picks up speed. Product life cycles are rapidly shrinking in all industries. The intensity of competition is increasing.

At the same time, new opportunities are taking shape. Markets are emerging in once underdeveloped or politically inhospitable parts of the world. Advancing technology is opening up new communications, information management and medical treatment approaches.

An important MTDC goal is to identify companies with the ability to constantly adjust to change. These are companies with managers willing to admit error or willing to acknowledge that a product line is becoming obsolete, perhaps even before sales have fallen drastically. MTDC doesn't pretend to have a foolproof formula for consistently accomplishing this goal. Some companies it has invested in have failed to adapt successfully to the rapidly changing global marketplace. MTDC is constantly honing its own skills in this area, seeking to adapt to the ever more stressful demands being placed on emerging companies.

touch screen technology for personal computers.

Not long after he began MicroTouch in 1982 with $15,000 of his own money and $150,000 from a limited partnership, he concluded that the available touch screen technology was too crude to run the software he envisioned. Though he was out of money, he came across an inventor with patents he felt could improve the technology. He raised another $300,000 from private investors, a bank loan and a venture capital firm and, by mid-1983, was ready to go to market. Unfortunately, little market existed.

As losses mounted, Logan continued to improve the product technically, all the while looking for expanding market opportunities and new financial support. He raised $1.5 million from three venture capital firms in 1984 and 1985, but still found market demand weak. In 1986, with MicroTouch "just about out of cash," Logan caught a break. He convinced MTDC that significant market opportunities were close at hand and gained a commitment for $250,000, which led three of its existing venture capital firms to invest another $750,000, for a total of $1 million.

"MTDC played a key role as the lynchpin of that deal," recalls Logan. Without its support, the other venture capital firms might have given up "and we might be out of business today."

Logan's technical adjustments and sales efforts finally yielded fruit in 1987, when the company made its first sizable sales – to control on-board radar for merchant ships and for a brokerage trading network. Within a year of MTDC's investment, MicroTouch was earning its first profits – and doing its first significant hiring.

Both sales and employment have expanded briskly since then, in tandem with rapidly expanding markets. By 1992, sales exceeded $31 million, and the company had 230 employees.

The company's rapid growth enabled it to go public in the spring of 1992, making available funds for additional investment in product development and new markets for its leading-edge product.

Finding International Opportunities

A serious interest in exploiting international markets is an important sign of flexibility and adaptability that MTDC looks for in small technology companies it evaluates for investment. In 1986, when the future looked especially perilous for MicroTouch, Jim Logan was actively seeking out export opportunities for the company's touch screen products.

"We began selling in Europe and we were in communication with potential distributors in Japan," he recalls.

The move has paid handsome dividends for MicroTouch. Even as the company was obtaining additional financing, fine-tuning its product, and discovering markets in the U.S., its foreign sales were quietly growing. By 1993, they represented 30% to 35% of the company's $31 million plus of revenues. And looking out further into the 1990s, says Logan, "I would like to see us get that number over 40%."

How MicroTouch and a Supplier Grow in Tandem

Cardinal Printing of Woburn, MA, has been in business 22 years, but it has only been in the last few, since it took on MicroTouch in 1989, that it has seen its business take off.

MicroTouch isn't Cardinal's largest customer by a long shot, but MicroTouch's special needs helped Cardinal create an entirely new service line. The new line has been instrumental in helping Cardinal expand from two employees to fifteen during that time period.

"MicroTouch asked us to start a ship-to-stock program," whereby Cardinal would print documentation for MicroTouch products and maintain it in inventory until needed, recalls Bob Danehy, Cardinal's Vice President, Sales. "We were providing that service informally, but didn't have a name for it."

Once Cardinal started offering its ship-to-stock program formally, "I'd say we've added at least five customers," says Danehy. "When you add someone for this program, it's significant. You have to add storage space and adjust your software system." The new customers also become long-term accounts.

"Their business and ideas have helped us become more competitive in our marketplace. We've grown together."

ANATOMY OF AN MTDC INVESTMENT

MicroTouch

FOUNDED: 1982

LOCATION: Methuen

PRODUCT: Computer touch screens used for video directories, video games, etc.

MTDC INVESTMENT: $250,000 in 1986

EMPLOYMENT AT TIME OF MTDC INVESTMENT: 36

1993 EMPLOYMENT: 230

Bringing Millitech Back from the Brink

For Willie Day, Chief Financial Officer of Millitech Corp. of South Deerfield, 1988 was an unforgettable year, and not for good reasons. A sudden reversal of the company's growth, combined with a credit squeeze, nearly threw Millitech into bankruptcy and made 1988 "the worst year of my life, and I spent a year of my life in Vietnam with the 101st Airborne Division."

Balancing Risk vs. Reward: Tough Decisions and Uncertain Outcomes

An important part of MTDC's charter is to make financing available to promising technology companies unable to obtain it from conventional private financing sources. In many cases, such companies, when they approach MTDC, are severely undercapitalized. MTDC doesn't have the resources to assist all these companies, so dozens of times each year its staff must weigh the potential risks and rewards of each case.

These are not easy decisions. The stakes are very high. Hanging in the balance are the livelihoods of many people, including employees and their families, as well as others in the community like suppliers and service providers.

Importantly for Massachusetts, MTDC has been able to step into several such situations and serve as the financing catalyst that allows a promising technology company to move forward. In some cases, a company on the brink of failure has not only survived, but prospered and created many more new jobs than might have been expected.

Unfortunately, even with people's livelihoods at stake, MTDC can't always be a hero. It must make pragmatic business decisions and, sometimes, the company seeking investment funds has serious long-term problems, in MTDC's view – its market has deteriorated, its management team is unwilling to adapt to new market conditions, or it has taken on excessive debt, for example.

Balancing risk vs. reward is the essence of the challenge MTDC faces on an everyday basis.

Day's observation is a reminder of just how traumatic life in a small, growing technology company can become. Since its founding in 1982 by University of Massachusetts faculty member Dr. G. Richard Huguenin as a developer of defense-related sensors and radars, Millitech had grown steadily, reaching a peak of $5.1 million in 1987.

Expecting the growth to continue, the company in 1987 invested $1 million in a new semiconductor manufacturing plant. Unfortunately, federal budgetary freezes and reallocations put a hold on contracts the company had been expecting, leading to a $1 million drop in revenues. The plant investment and revenue drop created a $2 million loss. The proverbial icing on the cake came when the company's main bank cut Millitech's credit line from $600,000 to $400,000.

"We had a bit of a disaster on our hands," recalls Day. With bankruptcy looming, not only were 60 Millitech jobs hanging in the balance, but countless others at dozens of supplier companies in the surrounding towns of western Massachusetts.

At that point, MTDC evaluated the situation and concluded that Millitech's problems were basically temporary in nature, and that if the company could get over the immediate difficulties, it could likely resume its growth path. MTDC extended an initial $250,000 loan with a warrant to purchase stock. That investment leveraged almost $1.9 million from private investors. Suddenly, Millitech was back on its feet and growing again.

By 1992, Millitech's sales exceeded $11 million, with a healthy profit. The company had 110 employees and a payroll of $5.2 million annually.

Moreover, the future looked extremely bright as the company moved decisively to carve out new commercial markets for itself. First on a long list of projected products was a vehicle radar system – technology that alerts automobile drivers in bad weather, and if they doze off, that they are too close to other vehicles or obstacles.

Says Willie Day, "MTDC's investment saved this company. It preserved 60 jobs. That's quite a bit of leverage for $250,000." Indeed, not only did it save the 60 jobs, but it gave Millitech the opportunity to create another 50 jobs.

A Supplier Rides Out the Tough Times – and Comes Out Tougher

At J&E Precision Tool Inc. in Southampton, Massachusetts, owners Eugene and Jim Labrie knew that Millitech was having a difficult time in 1988. Because Millitech was one of J&E's largest customers, the Labrie brothers also knew they were at some risk of not only losing an important customer, but of not being paid for work they had done.

"We were told by a few people that they were getting shaky," says Eugene Labrie. "But we stayed with them. We always thought they were a good, fast-growing company. And besides, they are nice people."

The decision has paid off well for J&E. Today, Millitech is J&E's second largest customer, helping keep between two and three of the machine shop's eleven employees working.

But beyond bringing in cash and keeping people working, J&E has gained some less tangible benefits from its association with Millitech. According to Jim Labrie, "Millitech has led us into the computer age. We were a manual business when we began doing business with Millitech in 1984. Now, most of our machines are run by computer."

In addition, Millitech typically requires the most complex and exacting machining of any of J&E's customers. "Their expectations are much higher than anyone else's," says Jim Labrie. "Because we are used to their standards, we do much better by everyone else." At the beginning of 1993, J&E had its biggest backlog ever and "Millitech has been a big part of our success," he says.

ANATOMY OF AN MTDC INVESTMENT

Millitech Corp.

FOUNDED: 1982

LOCATION: South Deerfield

PRODUCT: Sensor and radar products for defense and commercial applications

MTDC INVESTMENT: $350,000 in 1988

EMPLOYMENT AT TIME OF MTDC INVESTMENT: 60

1993 EMPLOYMENT: 110

Economic Development, with a Twist

Business growth and economic development are complex issues that arouse heated debate. Some argue that government has no role. Others argue that government must somehow stimulate the process via tax or regulatory policies.

There are no easy or simple approaches to successful economic development. MTDC's experience successfully investing in dozens of Massachusetts technology companies provides several important insights into the economic development process:

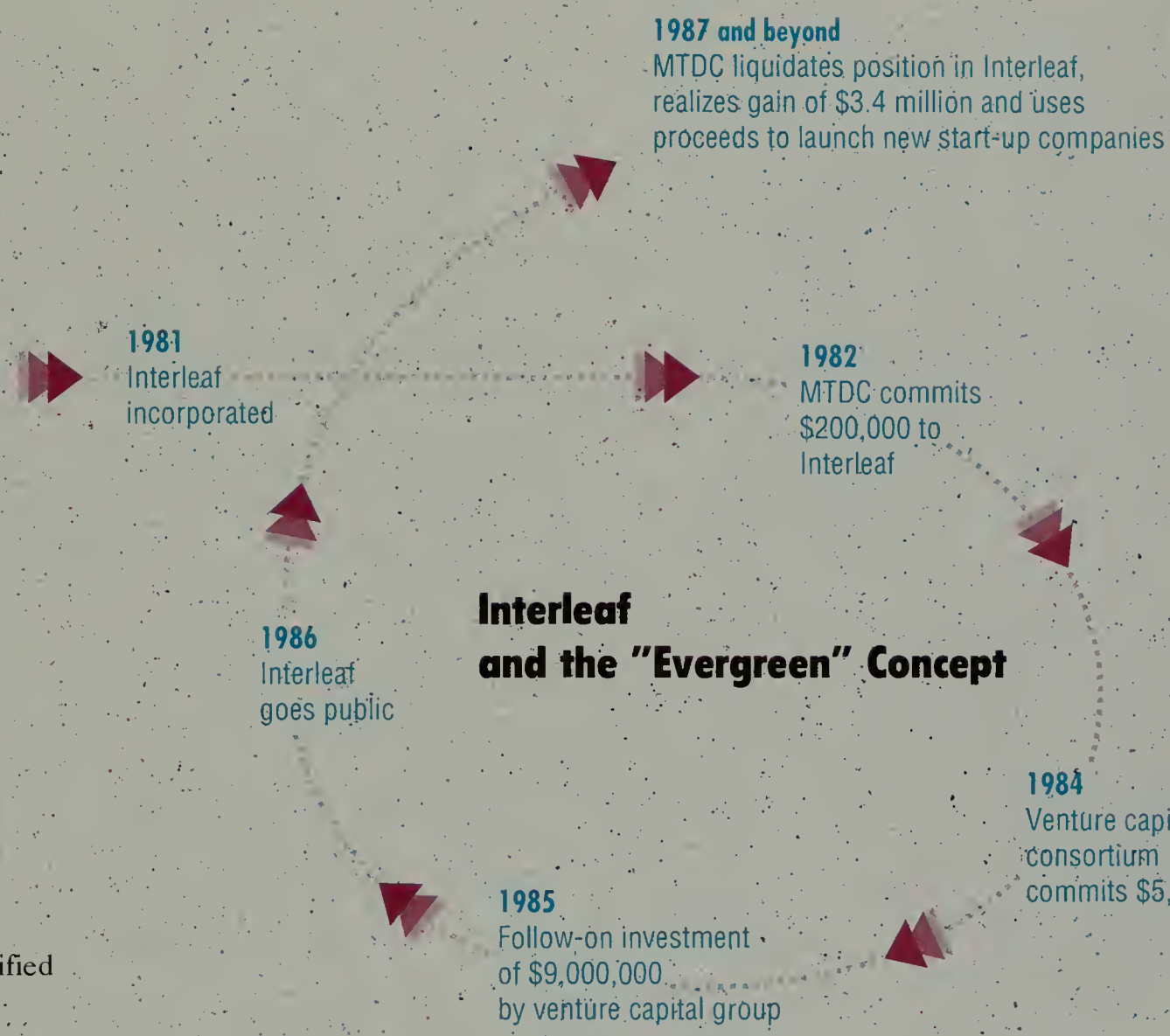
• *Government can play a useful role.* MTDC is a government entity that has achieved substantial documented success. While MTDC may be an anomaly in the world of government-sponsored economic development, its special focus on early-stage technology companies is part of its uniqueness, and its success.

• *Government-business partnerships are an essential component of successful economic development.* In nearly all MTDC's investments, private investors were also involved – leveraging its limited resources, and helping to build successful companies.

• *Successful economic development requires patience and commitment.* Many of the companies MTDC has invested in have taken many years to fulfill their initial potential. Without the backing of patient investors like MTDC and others, some of the most successful of these companies might today be out of business.

• *An education infrastructure is an essential component of economic development.* Most of the companies profiled here along with others MTDC invests in depend heavily on the local educational institutions to provide skilled and trained employees. Massachusetts is fortunate to have a variety of such institutions, ranging from Bunker Hill Community College to Boston University

How an MTDC success spawns economic success


1987 and beyond
MTDC liquidates position in Interleaf, realizes gain of $3.4 million and uses proceeds to launch new start-up companies
1981
Interleaf incorporated
1982
MTDC commits $200,000 to Interleaf
Interleaf and the "Evergreen" Concept
1986
Interleaf goes public
1984
Venture capital consortium commits $5,100,000
1985
Follow-on investment of $9,000,000 by venture capital group

to MIT, producing qualified workers.

• *The ripple effects from successful economic development lay the foundation for further development.* The ripple effects are measured not just in new jobs and money spent with suppliers. They are measured in additional innovation, heightened standards, and additional investment by individuals and companies benefiting economically. Those effects breed additional development that may not even be anticipated.

• *Lots of economic development happens on a small scale.* There is a tendency in economic development to look for the "big hit" – the major corporations that will provide many thousands of jobs via a new or relocated plant. But, as the companies profiled here make clear, the same effect can be achieved if many small companies succeed. And there is a greater amount of security in those jobs, since it is unlikely that all the small companies will ever disappear at once, while a corporate employer can move or disappear very quickly.

• *The dynamics of economic development are changing rapidly.* The dynamics are changing because the economy is changing. Our nation's economy is increasingly being driven by smaller companies rather than by major corporations. Economic development goals must reflect that shift.

• *Specialized expertise is essential to successfully invest in small companies.* MTDC has learned hard lessons about investing in young technology companies – some of them bitter and costly lessons – that have made the staff smarter about the process. One needs to take a careful and analytic approach in trying to do more of what MTDC has done, and make sure that the people involved have the necessary expertise.

"A key issue for MTDC's people is that they don't fall prey to wishful thinking as some venture capitalists do. They won't sit back and hope that things will work out. They work their tails off. They may stretch to do a deal in the State, but they work it like it was a private deal and their own money and I think that is why they've been successful. They have an extensive formal investment process; a key asset of that process is a great Board of Directors."

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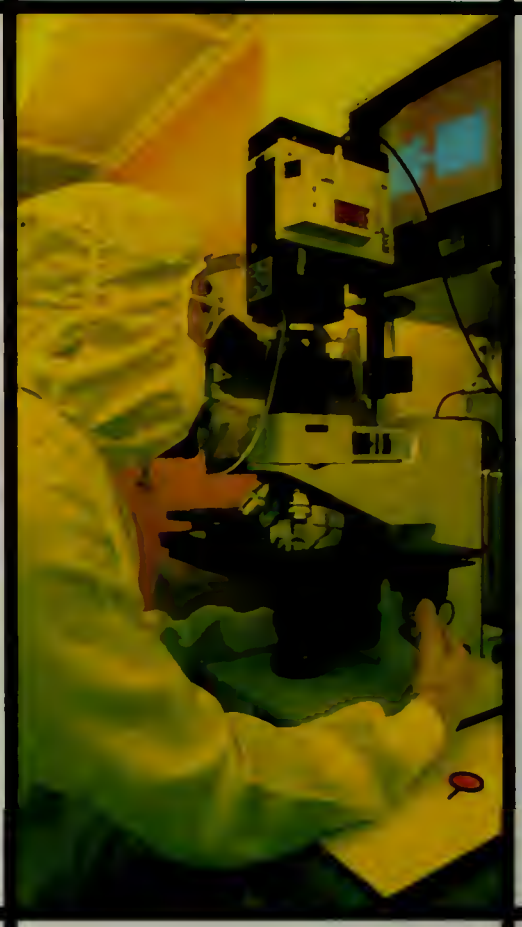

MTDC

Massachusetts Technology Development Corporation

148 State Street

Boston, Massachusetts 02109

TEL 617 723-4920 FAX 617 723-5983